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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/623,940	07/18/2003	Atsushi Nakajima	7272-113 / 10302986	6489
167 7590 12/26/2007 FULBRIGHT AND JAWORSKI LLP 555 S. FLOWER STREET, 41ST FLOOR LOS ANGELES, CA 90071			EXAMINER TRAN, NHAN T	
			ART UNIT 2622	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/623,940	Applicant(s) NAKAJIMA ET AL.	
	Examiner Nhan T. Tran	Art Unit 2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 October 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-5,7 and 9-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-5,7 and 9-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1, 3-5, 7, 9-11 have been considered but are moot in view of the new ground of rejection.

Specification

2. The new title of the invention filed 10/15/2007 is accepted. Thus, the previous objection to the title is withdrawn.

Claim Objections

3. Claims 1, 5, 7 & 10 are objected to because of recitation of the following informalities:

Regarding claim 1:

In line 15 of this claim, "the image data from the image sensor" should be corrected to read as -- the image from the image sensor -- or -- an image data from the image sensor --.

In line 18 of this claim, "like a gray level contour line map" should be corrected to read as -- in a gray level contour line map --.

Regarding claim 5:

In line 3 of this claim, "a change in brightness in each of the divisions separately emphasized" should be corrected to read as -- a change in brightness in each of the divisions is separately emphasized --.

Regarding claim 7:

In line 1 of this claim, "the contrast" should be corrected to read as -- a contrast --

In the last line of this claim, "like a gray level contour line map" should be corrected to read as -- in a gray level contour line map --.

Regarding claim 10:

In line 3 of this claim, "a change in brightness in each of the divisions separately emphasized" should be corrected to read as -- a change in brightness in each of the divisions is separately emphasized --.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

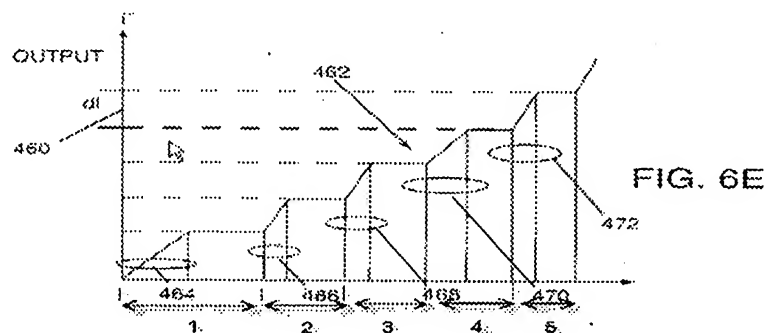
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 3-4, 7 and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinotsuka et al. (US 2002/0041404) in view of Bamberger et al. (US 5,946,407).

Regarding claim 1, Shinotsuka discloses an image sensor (Figs. 1, 8 & 11) for taking an image comprising a plurality of light-sensor circuits (pixel circuits as shown in Fig. 8) each representing a unit pixel (Fig. 1) and comprising a photoelectric converting element (photodiode PD in Fig. 1) for producing a sensor current proportional to a quantity of incident light falling thereon, a MOS type transistor (Q1) having a logarithmic output characteristic in a weak inverse state for converting the sensor current produced by the photoelectric converting element into a voltage signal (Figs. 1 & 7 and paragraphs [0008]-[0009], [0025]-0026] and [0036]), and an initializing means (node VD) for initializing the sensor circuit by removing electric charge accumulated in the parasitic capacity of the photoelectric converting element by changing a drain voltage (voltage VD) of the MOS type transistor (Q1) to a level lower than a normal for a specified period , and an outputting means (Q3) for outputting an image signal having a logarithmic response characteristic at a large sensor current (e.g., current above $1\text{E-}13\text{A}$ shown in Fig. 7) and a sensor signal having a non-logarithmic response characteristic at a small sensor current (e.g., sensor current below $1\text{E-}13\text{A}$; see paragraphs [0008]-[0009], [0025]-0026] and [0036]).

Shinotsuka does not explicitly discloses an image processing device for emphasizing a contrast of an image taken by the image sensor, wherein a whole luminous area of an image is divided into a plurality of continuous divisions, and the image [data] from the image sensor is converted by using a conversion table into image data with emphasis of a change in brightness in each of the divisions to represent the luminous distribution [like] in a gray level contour line map.

However, as taught by Bamberger, an image processing device (Fig. 1) comprises an image sensor (scanning device 10, col. 4, lines 56-64) and image processing unit (microcomputer 12 and processing board 14) that emphasizes a contrast of the output image from the image sensor, wherein a whole luminous area of an image (Figs. 6C, 6D) is divided into a plurality of continuous divisions (see Fig. 6E, for clarification of the drawings, the Examiner indicates divisions 1, 2, 3, 4 and 5 as shown in Fig. 6E below. By this clarification, the selected image includes five continuous divisions of the whole luminous area at the input side corresponding to five converted interval values dI at the output side), and the image data output from the image sensor is converted by using a conversion table (lookup table) into image data with emphasis of a change in brightness in each of the divisions to represent the luminous distribution in a gray level contour line map (see Bamberger, col. 13, lines 6-33, it is noted that a gray level contour line map is presented by the converted gray values of the output image data having contour of the image being emphasized as shown in Fig. 3E-3G, 4B-4D and 5A-5C). Such image processing enhances the image contrast to assist radiologists to improve their diagnostic accuracy, and hence diagnosis effectiveness (see Bamberger, col. 2, lines 39-46 and lines 55-60).



Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Shinotsuka and Bamberger to construct an image processing device for emphasizing a contrast of an image in which a whole luminous area of an image is divided into a plurality of continuous divisions, and the image [data] from the image sensor is converted by using a conversion table into image data with emphasis of a change in brightness in each of the divisions to represent the luminous distribution [like] in a gray level contour line map. Doing this would enhance the contrast of the image to assist radiologists to improve their diagnostic accuracy, and hence diagnosis effectiveness as taught by Bamberger above.

Regarding claim 3, the combination of Shinotsuka and Bamberger as discussed in claim 1 further discloses, in Fig. 6E above, that the whole brightness area of an image is divided into a plurality of continuous divisions (continuous divisions 1-5), wider for a dark portion (division 1 is wider) and narrower for a light portion (division 5 is narrower) desirable to be emphasized in contrast, and a continuous change in brightness in each of the divisions is emphasized (see Bamberger, col. 13, lines 12-34, it is noted that the input side at division 1 represents lower intensity of input grey values which indicate a dark portion in the 255 grey scale. The input side at division 5 represents a higher intensity of input grey values indicating a bright portion in the 255 grey scale).

Regarding claim 4, also seen in Fig. 6E of Bamberger as illustrated above is that a whole luminous area of an image is divided into a plurality of discrete divisions (5 discrete divisions) and a change in brightness in each of the divisions is separately emphasized (col. 13, lines 12-34).

Regarding claims 7, 9-10, these method claims are also met by the analyses of claims 1, 3-4, respectively.

6. Claims 5 & 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinotsuka et al. and Bamberger et al. and in further view of Chen et al. (US 6,141,450).

Regarding claim 5, although Shinotsuka and Bamberger as discussed in claims 1 and 4 teaches converting the image into gray-scale image (see Bamberger, col. 13, lines 13-34), Shinotsuka and Bamberger are just silent as to each of luminous areas between discrete divisions are converted into halftone image data.

However, it is well recognized by Chen that a gray-scale image is converted into a halftone image data for compression. By this conversion, the image layer is not only enhanced by the halftone conversion but also reducing image data size by compression, thereby improving image processing and storage (see Chen, abstract, col. 1, lines 8-20 and lines 33-42).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the apparatus of Shinotsuka and Bamberger to include halftone conversion and compression as taught by Chen for converting each of luminous areas between discrete divisions into halftone data in compressing process so that not only the image layer would be enhanced by the halftone conversion but would also reduce image data size by compression, thereby improving image processing and storage.

Regarding claim 11, this claim is also met by the analysis of claim 5.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nhan T. Tran whose telephone number is (571) 272-7371. The examiner can normally be reached on Monday - Friday, 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Ometz can be reached on (571) 272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


NHAN T. TRAN
Patent Examiner